

rule, very unfavourable, a speedy and complete recovery may take place after severe injury and multiple fracture of the pelvis.

The author does not agree with those who hold that fracture of the pelvis is in every instance the result of direct external violence. He recognizes the fact that the injury is often due to forcible pressure as in "buffer" and other railway accidents, to a severe blow on the pelvis, or to a fall from an elevation, but at the same time believes that some forms of pelvic fracture may fairly be attributed to muscular action. The part played by muscular action and by forcible traction on the tendinous and ligamentous structures in the production of fracture has of late been much extended. It is now generally acknowledged by surgeons that detachment of the lower epiphysis of the radius, and fracture of a malleolus, of the neck of the femur, of the greater tuberosity of the humerus, of the patella, and of the olecranon, may be produced by traction. The anterior inferior spine of the ilium may, as has been proved by experiment on the dead body, be torn away by forcible traction on the ligamentum Bertini, and likewise the anterior superior spine may be detached through strong contractions of the sartorius muscle. In young subjects the crista ilii, which is but loosely connected to the rest of the bone, may be readily detached in consequence of a fall or blow. The author points out that in every case of such form of injury the whole of the epiphysis is detached, although the injuring force has often been applied but to a small portion. In order to explain this the author holds that another factor must be sought for, and that this is probably strong contraction of the muscles which are inserted into the outer surface of the crista, viz., the gluteus maximus and the gluteus medius, both strong muscles and capable of producing a separation of the crista. The patella, as is well known, is often broken through the contraction of the quadriceps extensor muscle, and the olecranon by the action of the triceps muscle. The occasional occurrence of a secondary fracture of the crista ilii into an anterior and smaller portion and a posterior and a larger portion, may be explained by the fact that the gluteus maximus is inserted into the portion of bone which corresponds to one fragment, and the gluteus medius into the other and posterior portion. An outward inclination of the crista ilii favours its detachment through muscular contraction.

Fracture of the body of the ilium, dividing it into a superior and smaller fragment and an inferior and larger fragment, may, the author believes, be caused in some instances through the conjoined action of all the glutei muscles. This view may be more readily accepted if it be considered that the glutei muscles are very strong, and that the resistance of the bone is diminished by its outward inclination. From experiments on the dead body it has been found that fracture of the ilium produced through powerful pressure or violent blows takes usually a vertical or slightly oblique direction.—*Brit. and For. Med. Chir. Review*, Jan. 1877.

33. *Partial Resection of the Sacrum on account of a Central Tumour.*—The above operation was performed by R. VOLKMANN (*Centralblatt für Chirurgie*, No. 46) on the wife of a gentleman of property, twenty-three years old, and in good health. The left edge of the sacrum was laid bare by a long incision from the sacro-iliac synchondrosis to the apex of the bone. This part of the wall of the sacrum had been distended into a scaly mass by the growth—a myeloid tumour. The chisel was introduced forcibly into the sacrum below the left sacro-iliac synchondrosis. The bone was divided by an incision curved towards the right, so that the tumour was completely surrounded by it. A strip of the right side of the sacrum about two centimetres broad remained, and the coccyx was not interfered with. After the bone had been chiselled through, the tumour was separated from the rectum with knife and scissors. The vessels were ligatured with catgut; the wound, which was about large enough to hold a man's fist, was filled with antiseptic gauze. The operation was performed under the spray, and the after-treatment was done antiseptically, with particular attention to drainage. Six weeks afterwards the patient was in a fit state for dismissal, with a superficial granulating sore, and scarcely any discharge. There were never any symptoms of inflammation of

the cord or its membranes. The only evil consequence was that the patient could not retain her water so long as before the operation, and complained of long-continued pain in the rectum after defecation; but these troubles had also, according to later accounts, almost disappeared at the end of the following four months. It is almost superfluous to point out the extreme interest of this case, not only because of the fact that the spinal canal was freely opened, and must have remained open for some time, without any mischief resulting to the cord or its membranes, but also because it indicates a fact which should form part of the creed of modern surgeons—viz., that operative surgery has not by any means reached its limit. Professor Volkmann has added one more region to those to which the surgeon's knife is admissible. Is it not almost certain that the surgery of the future will deal with other and more vital parts? And lastly, it may be wise to reflect that so severe an operation could hardly be undertaken by the boldest surgeon without a firm belief in the efficacy of the safeguards which modern improvements have introduced in the treatment of wounds.—*Med. Times and Gaz.*, Dec. 23, 1876.

34. *On Intra-articular Injuries of the Knee.*—Prof. DITTEL, of Vienna (*Stricker's Jahrbücher*, Hft. 3, 1876), has obtained from experiments on the dead body and from clinical observations, the following points of information with respect to intra-articular injuries of the knee:—

"1. The crucial ligaments are never torn through; but by violent movements of the bones carried beyond the functional limits they may be separated at their attachments. It is almost always the femoral end that is torn away—that of the posterior ligament by over-extension, that of the anterior ligament by over-flexion.

"2. The lateral ligaments may, by hyperabduction or hyperadduction, be torn through or detached either at the femoral or at the tibial end. There will be a separation in the former case of a scale of bone, in the latter of the corresponding semilunar cartilage. The lateral ligaments remain intact under those conditions which produce lesions of the crucial ligaments.

"3. Through violent movement the anterior crucial ligament may, as has been shown in a clinical instance, be torn away at its tibial end, carrying with it the spine of the tibia together with a disk of bone.

"4. Through violent movement in an opposite direction, the posterior crucial ligament, together with a portion of bone, may be torn away from the tibia.

"5. Considerable displacement of the tibial epiphysis forwards in a flexed condition of the leg corresponds to the lesion of the anterior crucial ligament; displacement posteriorly, and into the popliteal space corresponds to the lesion of the posterior crucial ligament.

"6. An abnormal range of the movements of abduction and adduction corresponds to lesion of the lateral ligaments. Whether these be torn through or detached at their insertion may be determined, if there is no swelling of the soft parts, by digital examination and from the presence or absence of a depression.

"7. That separation of a crucial ligament at its long attachment should take place at its femoral end, and hardly ever at its tibial end, is probably due to the fact that the femoral insertion is small, quite circumscribed, and surrounded by articular cartilage, whilst the tibial insertion sends out ramifying fascicles of fibrous tissue by which it is connected to the periosteum."

In discussing the diagnostic signs of fracture of the spine of the tibia, Prof. Dittel states that crepitation cannot be made out with any certainty, and that the free and abnormal mobility of the head of the tibia that one would expect after separation of the anterior crucial ligament, is not always evident in the living subject. The osseous fragment to which the lower extremity of this ligament always adheres may not have been completely detached from the head of the tibia, and in any case the surgeon would naturally be unwilling to convince himself as to the abnormal mobility, from fear lest by too energetic action he might cause pain to the patient, and convert what might probably be only a partial fracture into a complete separation. The most important symptom is a sudden and abundant accumulation of blood in the capsule, which after